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Supplementary material

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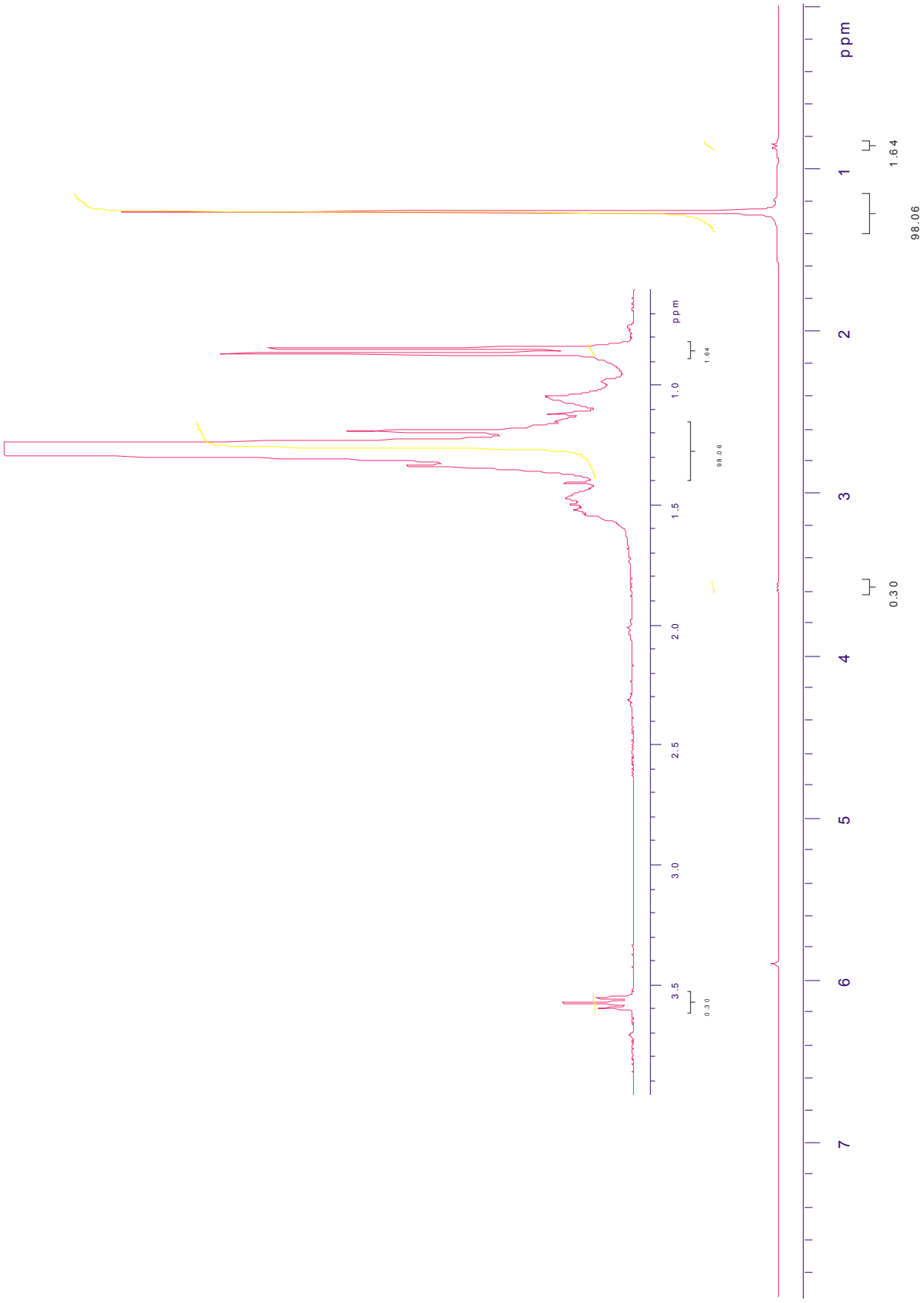

Figure 1. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of PE yielded after polymerization with TIBA chain transfer reagent and oxidative work up (Mw = 2160).

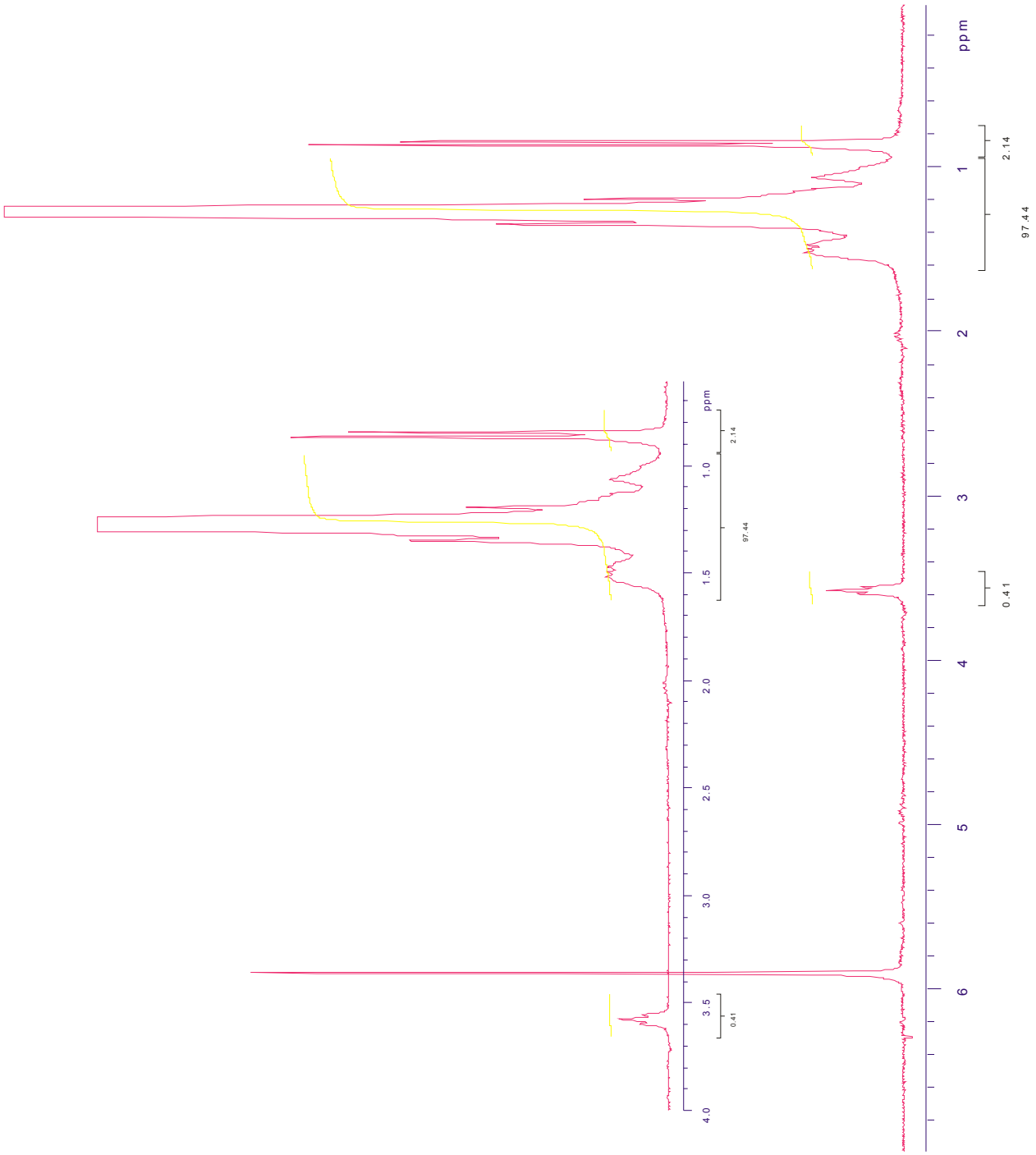

Figure 2. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of PE yielded after polymerization with TIBA chain transfer reagent and oxidative work up (Mw = 1460).

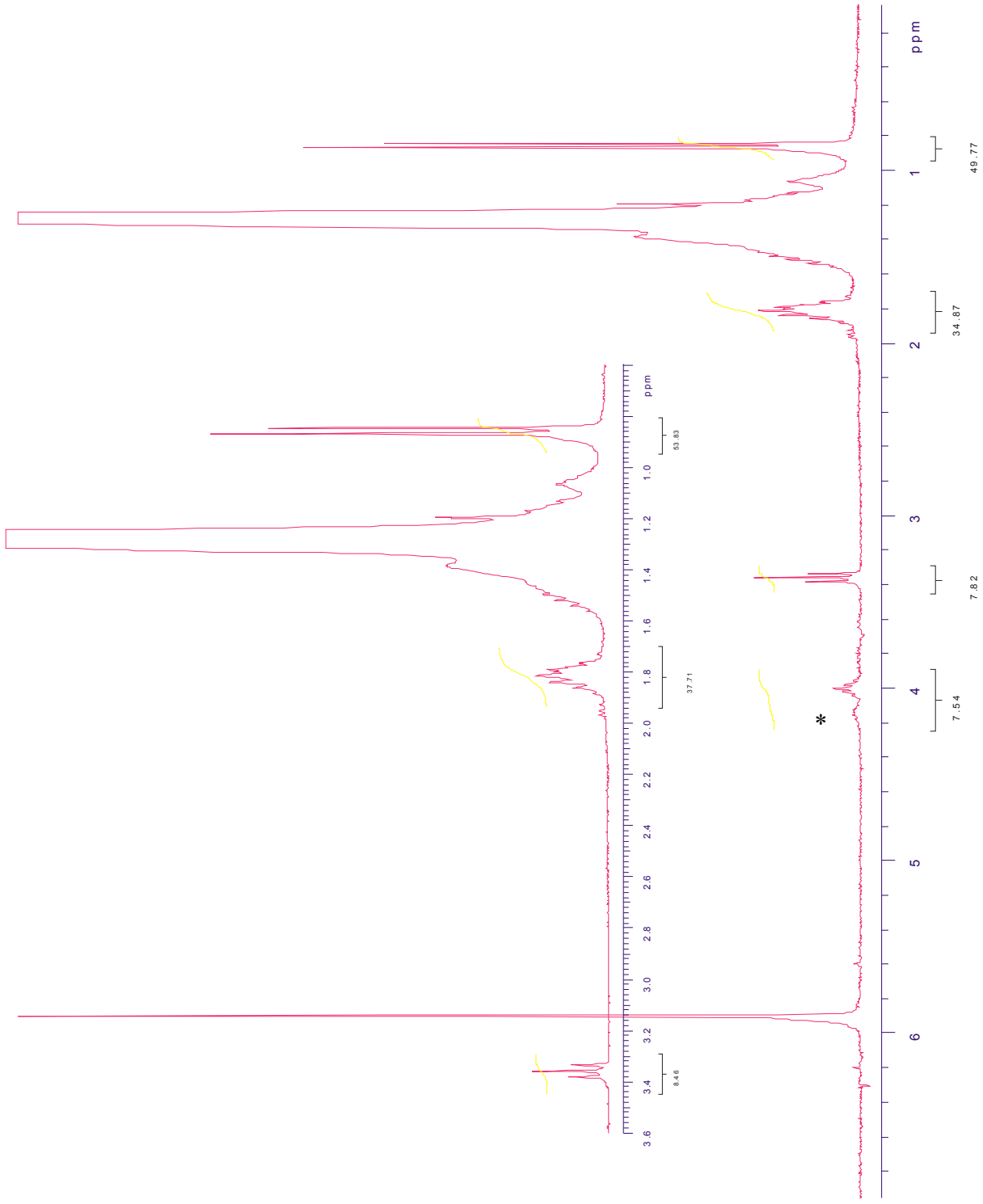

Figure 3. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of bromo terminated polyethylene.* unidentified impurity

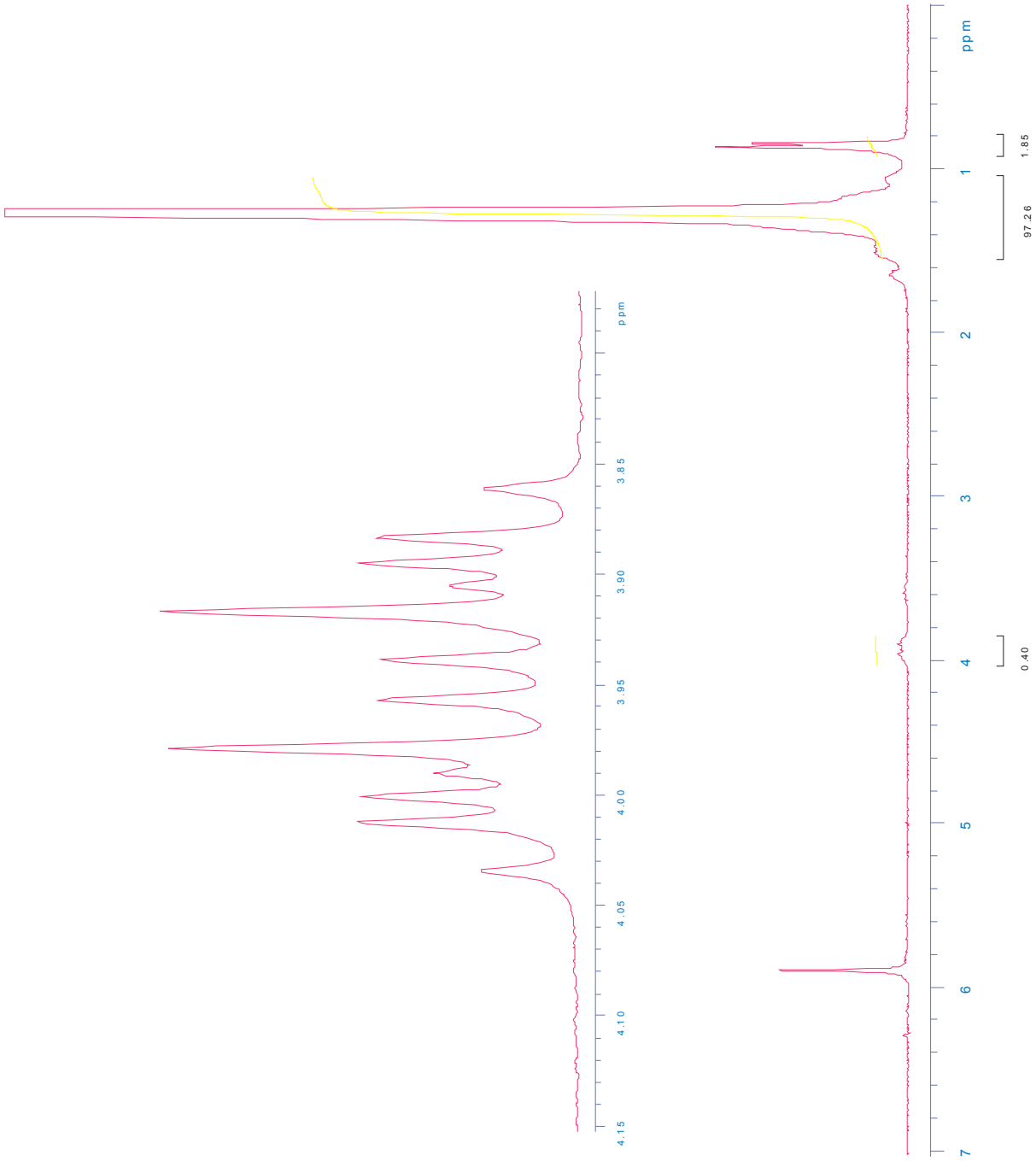

Figure 4. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of chloro sulfite terminated polyethylene.

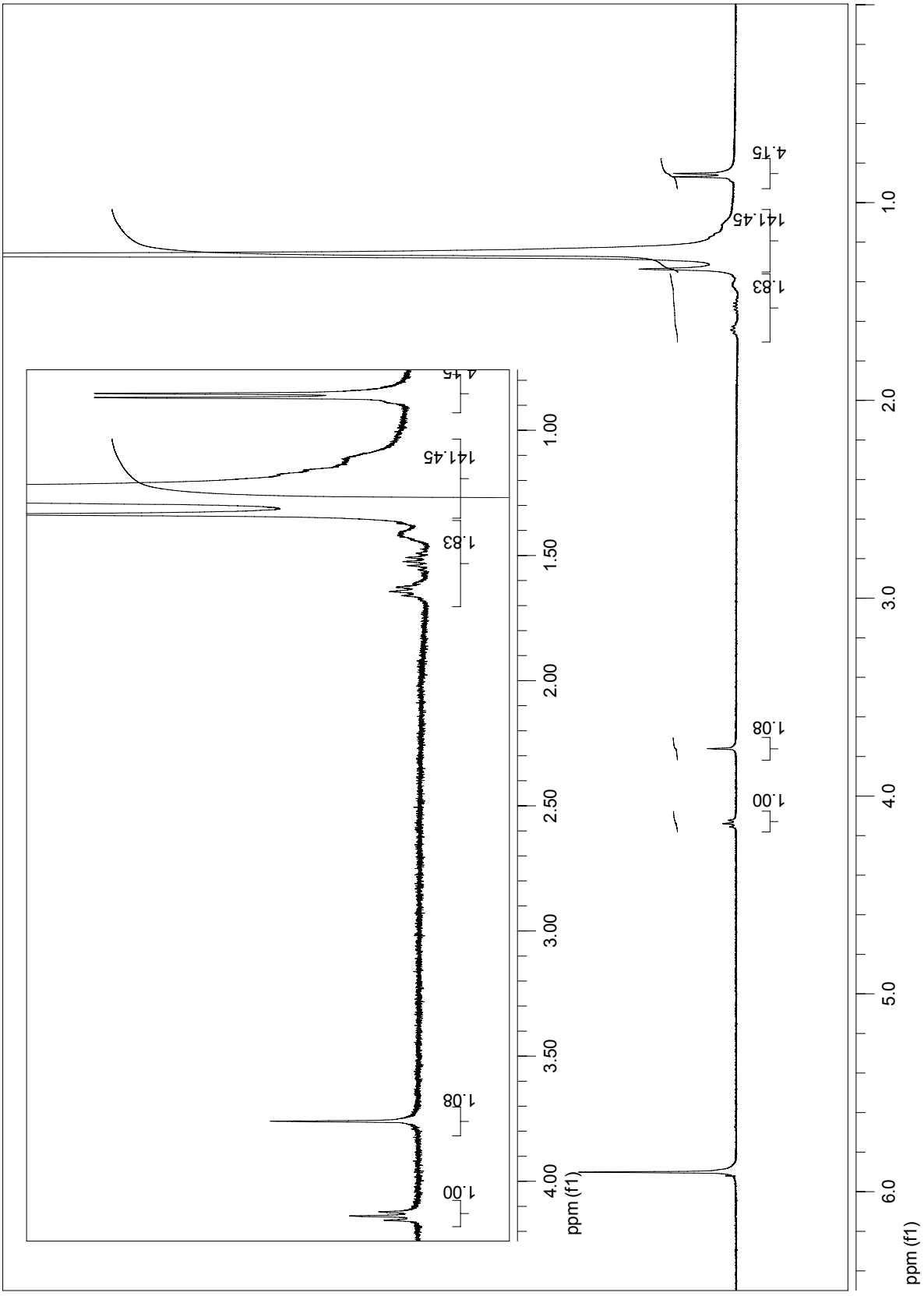

Figure 5. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of α-bromo-acetate terminated polyethylene.

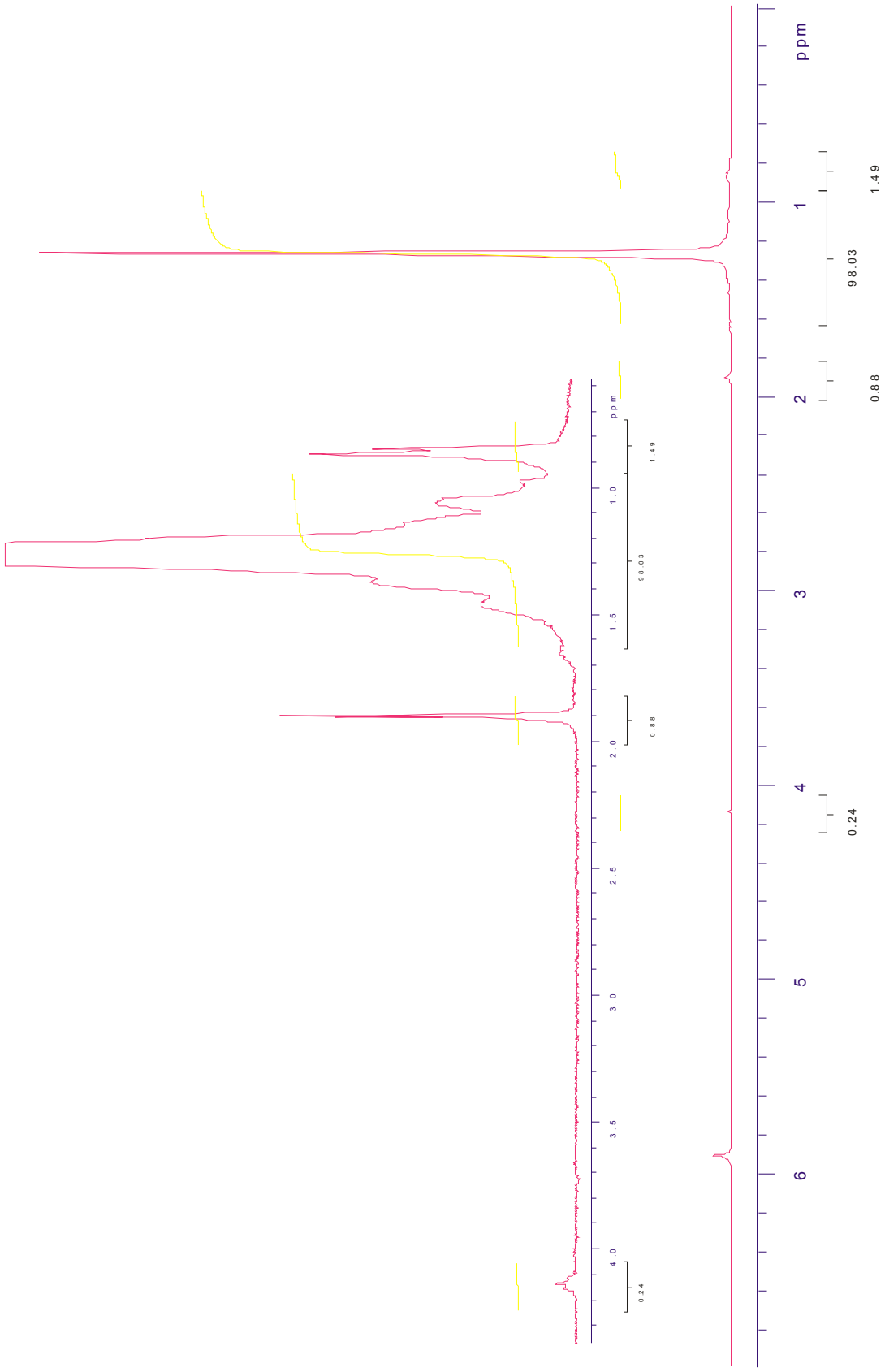

Figure 6. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of α-bromo-isobuturate terminated polyethylene.

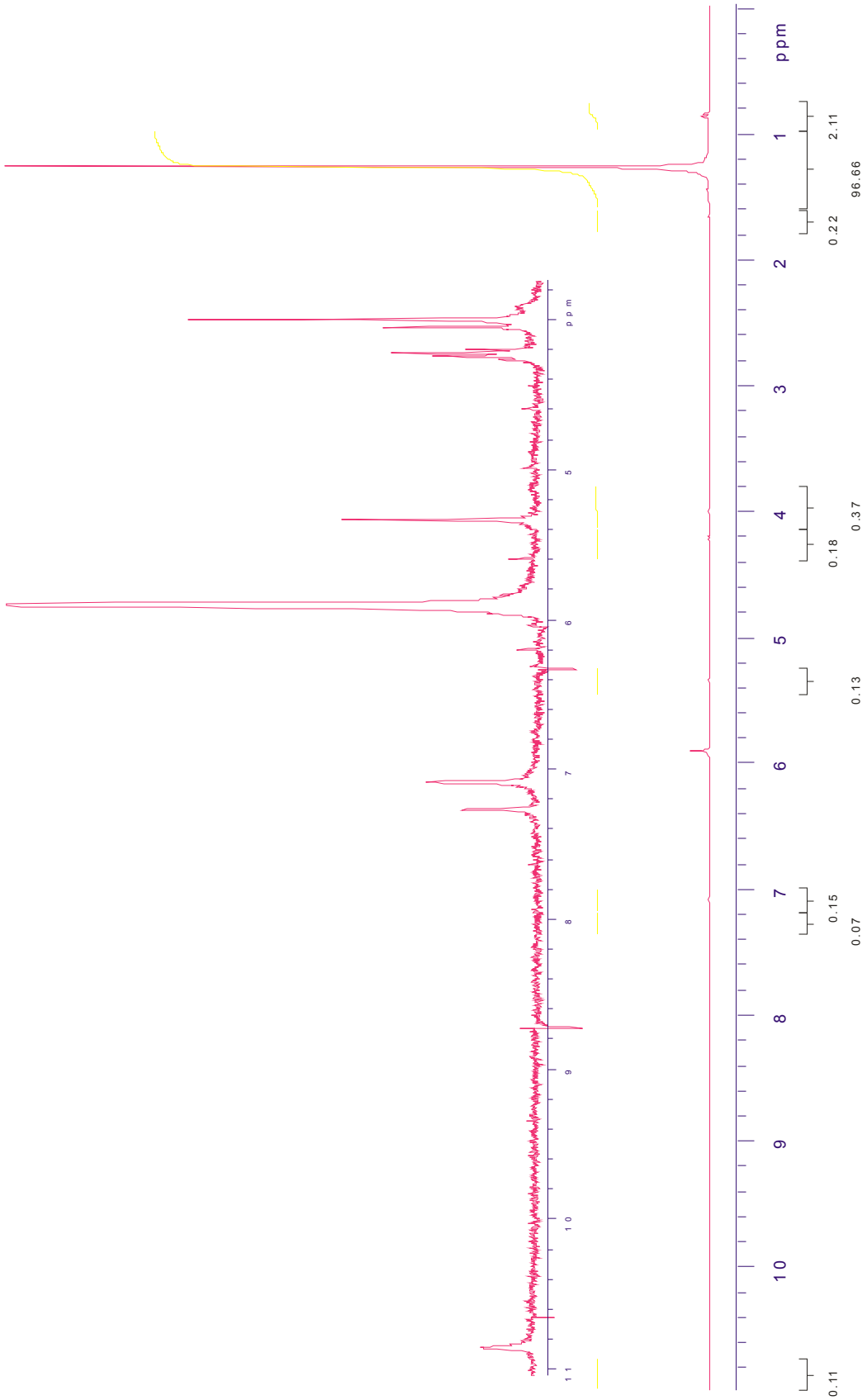

Figure 7. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of 1-(1-PE-oxycarbonyl-methyl)-3-methyl-imidazoliumbromid.

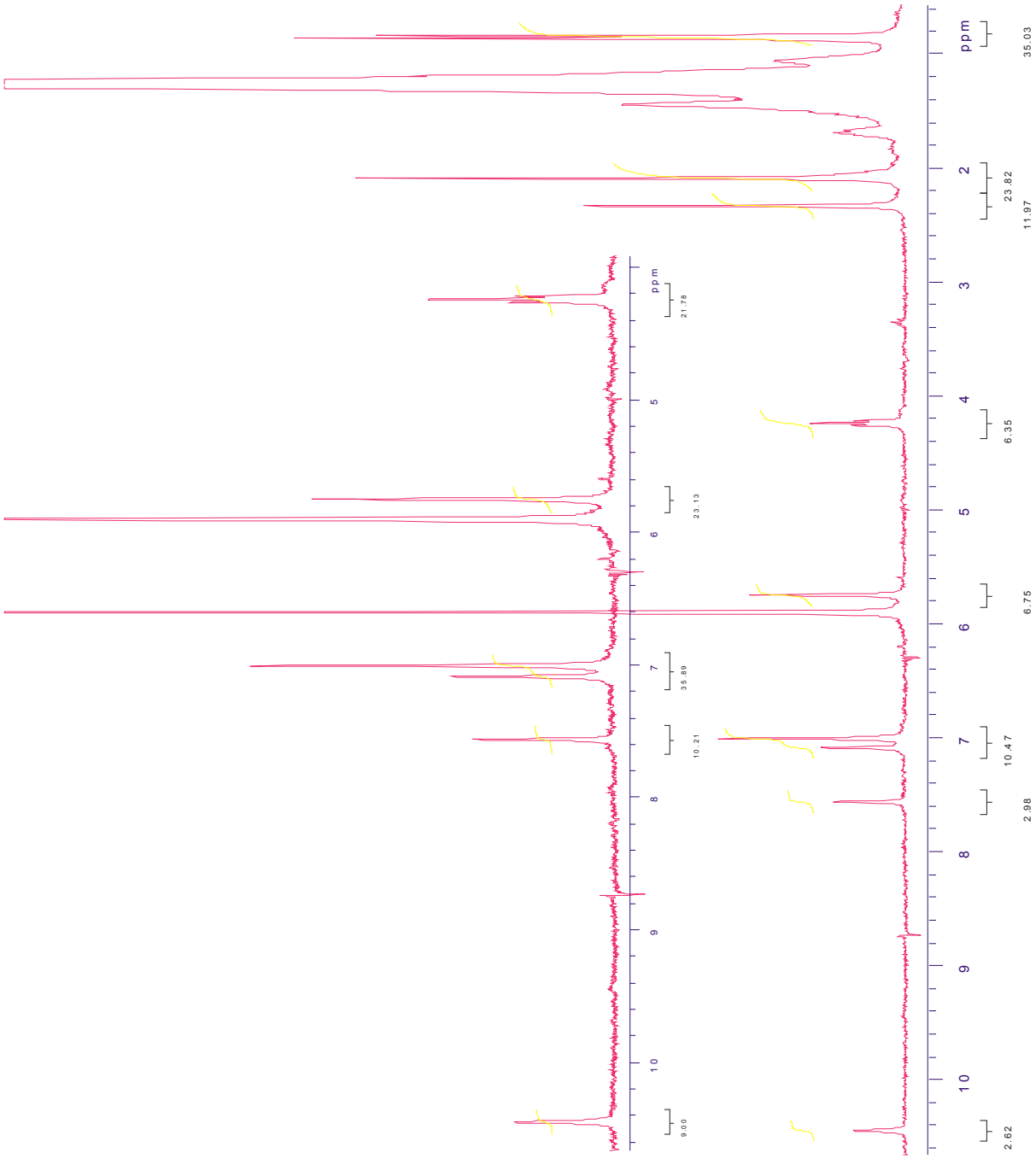

Figure 8. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of 1-(1-PE-oxycarbonyl-methyl)-3-(2,4,6-trimethyl-phenyl)-imidazoliumbromid.

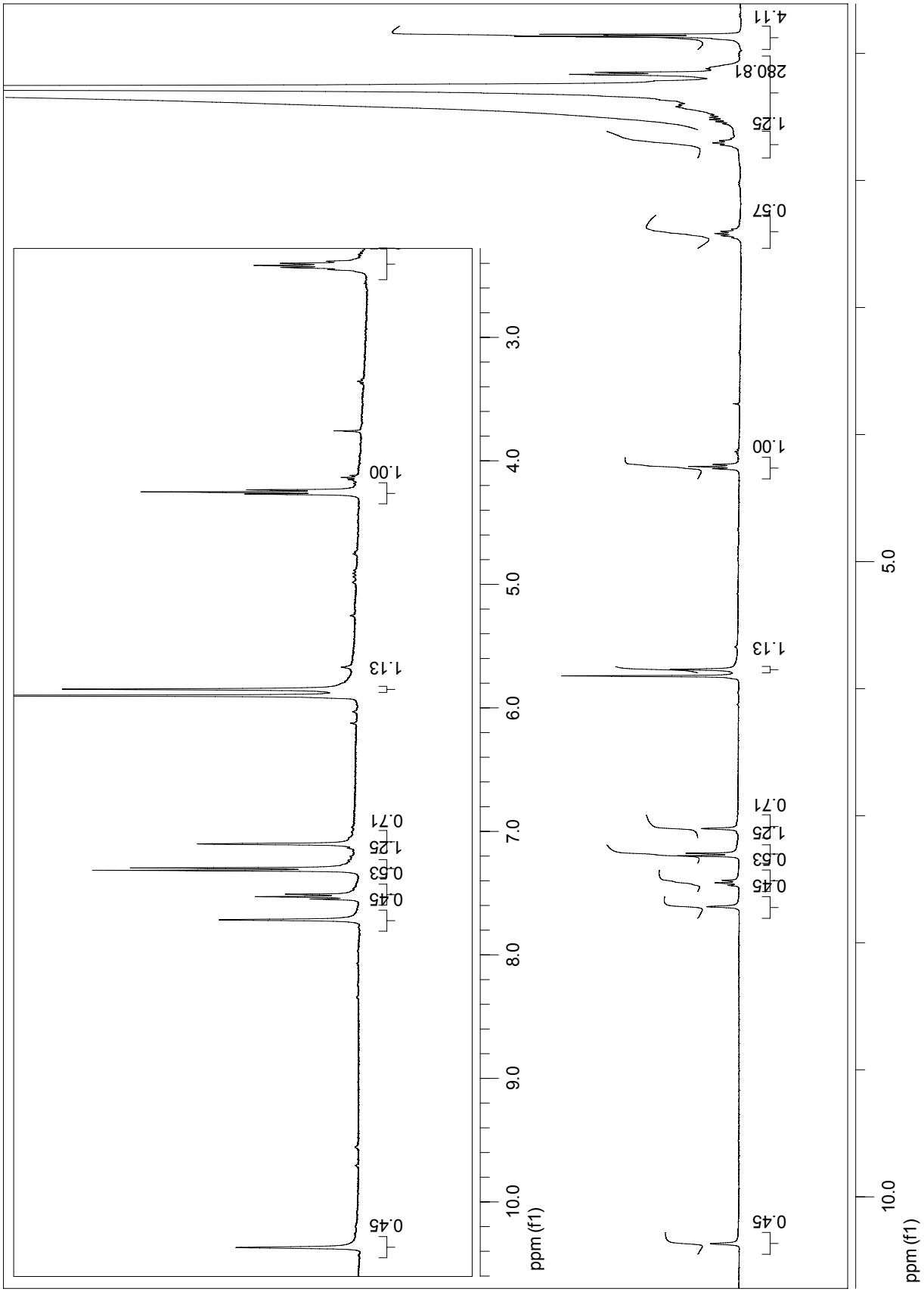

Figure 9. ^{1}H-NMR spectrum ($C_2D_2Cl_4$, 393K) of 1-(1-PE-oxycarbonyl-methyl)-3-(2,6-di-*iso*-propyl-phenyl)-imidazoliumbromid.